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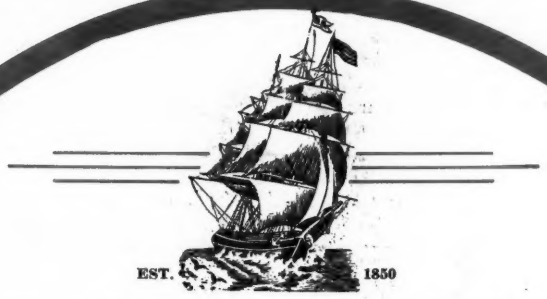

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Vol. 95 NOVEMBER 22, 1941 No. 11

The N. F. A. Southern Convention

Defense Crop Supply Forms Main Subject for Discussion. Fertilizer Supplies Expected to be About Adequate for Spring Season.

WITH an attendance totaling over 350, the Seventeenth Annual Southern Convention of The National Fertilizer Association, held in Atlanta on November 17th, 18th and 19th, gave serious consideration to the problems confronting the industry in its participation in the National Defense Program. Included among the topics presented by the various speakers were the available supply of fertilizer materials, the increase in southern livestock production, the size of crops needed to fill the Lease-Lend Program, and the need for more efficient farm methods to produce this required result.

In opening the first General Session held on November 17th, John A. Miller, president of the Association, reviewed the position of the industry with respect to needed materials. "The fertilizer industry fully appreciates its great responsibility and is ready and willing to put its shoulder to the wheel in the cause of food for national defense," said Mr. Miller. "Secretary Wickard has told us that food will win the war and make the peace. To that end, the American farmers next year must produce more than they ever produced before.

"This means," Mr. Miller continued, "that the fertilizer industry must be prepared to meet increased demand upon its resources while at the same time face many limitations imposed upon it by the enlarged demand of all other industries for raw materials for the national defense program.

Fertilizer Supplies

"Accurate statistics, as distinguished from estimates, are not too plentiful with respect to fertilizer and fertilizer materials at this stage of the emergency. Very careful thought, however, has been given to the situation as it exists by both the industry and the Government. Although it must be remembered that the situation may change any time and change profoundly, the outlook for supplies next year is not too dark.

"As to nitrogen, if ships can be made available for the importation of a portion of our supplies from Chile and the deflection of nitrogen fixation capacity within the country to other industrial requirements is not too great, it is believed that from 85 to 90 per cent of the 1941 consumption of nitrogen will be provided.

"In superphosphate, the transportation of phosphate rock and a sufficient supply of sulphuric acid needed for the acidulation of superphosphate are the probable bottlenecks.

"As to potash, about 500,000 tons of refined salts and from 35,000 to 50,000 tons of run-of-mine salts will be available from American producers. If transportation bottlenecks do not operate too severely, the national need will be adequately supplied."

South Makes Livestock Gains

With the urgent demand for all the dairy products which can possibly be produced, the livestock industry moves to the front of the list of farm products the production of which must be speeded. In an address, "The Fertilizer Industry's Interest in Livestock Production," Dr. Milton P. Jarnagin, professor and head of the Department of Animal Husbandry, College of Agriculture, University of Georgia, Athens, Ga., pointed out the South's part in this program and its effect upon the region's agricultural future.

"Farming is the biggest business in the seven Southeastern States," he said. "In 1940 the gross farm income from livestock produced in this area was well above $419,000,000. The value of cotton and seed produced in the same section was slightly over $306,000,000. Using

the dollar as a yardstick, we find that livestock has become of more economic importance than cotton in the Southeast. For each dollar derived from cotton there was a gross income from livestock of $1.37.

"To support this ever-increasing industry, the Southeast needs many more millions of acres of improved permanent pastures. The area planted to winter cereals for feed should be doubled. The growing of winter hay is profitable. More temporary winter and summer grazing should be provided. Some fertilizer could be profitably used on most of these new acres devoted to livestock."

I. W. Duggan, director, Southern Division of AAA, told the convention that the defense program is supplying a spur to action that has been needed for a long time to accelerate diversification and better farming methods. He said that even the small farmer without adequate lands or other facilities of producing large quantities of milk, meat, eggs, and vegetables can aid in the defense program.

"The small farmer should be encouraged to produce all he possibly can for his own use at home," said Mr. Duggan. "By doing this, he will contribute to the national defense program in two very definite ways—first, by growing at home the products he normally has been buying in the past, he releases that amount of food to be used in other areas where needed; secondly, more and better food on the farm table—more pasture land—more home gardens —mean better diet and healthier and stronger people—a vital factor in national defense."

Better Farming Methods Show Results

Reduction in cotton acreage may cause a necessity for improving farm practices, Mr. Duggan told the convention. "The use of commercial fertilizer on cotton has shown a steady growth since 1934. In 1934, cotton farmers used less than a million tons of commercial fertilizer. This year the total runs over 1½ million tons. Not only has the total amount increased, but the rate of application on cotton farms has steadily increased during the past eight years. In 1932, 205 pounds per acre were used; last year's rate was 277 pounds per acre.

"The results of these better methods were reflected in average yields," he said. "In the five-year period from 1928 to 1932, the average yield of cotton was 173 pounds, while last year it had jumped to 252 pounds—a little better than half a bale an acre. And this year, in spite of unfavorable growing conditions, insect damage, and other setbacks, the yield was indicated as of November 1st to be 233 pounds per acre.

"In terms of cotton economy, this is good news, for increased yields per acre tend to lower the cost of production."

Annual Industry Dinner

The Annual Industry Dinner held on the evening of November 18th was well attended. President Miller presided and after introducing a number of distinguished guests, presented the speaker of the evening, Dr. John J. Tigert. Formerly a United States Commissioner of Education and now president of the University of Florida, Gainesville, Fla., Dr. Tigert gave an interesting and thought-provoking talk on "Education for Defense in a Changing World."

Need for Farm Production

At the second General Session on November 19th, the opening address was made by Roy F. Hendrickson, administrator of the Surplus Marketing Administration. According to Mr. Hendrickson, an average of $5,000,000 a day of Lease-Lend money will go for the purchase of agricultural commodities during the next three months.

"A billion and a half dollars of Lease-Lend money is being concentrated in the purchase of agricultural commodities," said Mr. Hendrickson. "We began our buying program last spring and this week we passed the $500,000,000 mark in our expenditures for farm products. We are continuing our buying and contracting for food stocks at a rate which will use another $500,000,000 by the end of February.

"The third $500,000,000 is, in a sense, pledged to be spent afterward, so that farmers may continue to see their way clear to keep on increasing the production of needed products, which will be coming from farms and feed lots during the spring and summer ahead.

"The fate and future of democracy depends upon our ability to push production to unprecedented levels," said Mr. Hendrickson. "After this struggle is won, our future economic and social welfare will depend upon our ability to distribute the abundance which this country is capable of producing."

Despite Lease-Lend purchases, Mr. Hendrickson reported that he foresaw no increase in food prices due to shortage of supplies. "Looking ahead over the next six months," he said, "rising production costs in terms of material and labor will be more responsible for any rise in food prices than shortage of supplies."

T. E. Milliman of the Office of Price Administration, Washington, D. C., in his talk,

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The Farm—Defense Plant No. 1

By J. A. WOODS

President, Chilean Nitrate Sales Corporation, New York, N. Y.

A radio talk on "Country Journal" program, Columbia Broadcasting System, November 2, 1941.

TO the man who lives in a city, nitrogen is just a chemical sounding word. But the farmer knows its importance. The world could not live without nitrogen. It is one of the basic plant foods. Crops will not grow without a plentiful supply, and when it is removed from the soil by the crops, it must be put back.

For many years, Americans, with their vast stretches of land, used relatively little fertilizer. The supply came chiefly from the farm itself, including farm manure, cottonseed meal and packing house by-products, such as dried blood and animal tankage. But now there is not enough of those materials to feed the crops required by our huge population, and some of them are more valuable in animal foods. American farmers must apply large quantities of nitrogen fertilizer, although we still use far less per acre than in the crowded Continent of Europe.

Curiously enough, this element that is necessary for peace is also essential for war. Dynamite, TNT, smokeless and black powder are familiar words to everyone, particularly at this time. They are all nitrogen compounds.

Because of the defense program, the usual peacetime demand for nitrogen has enormously increased. Several months ago President Roosevelt stated that one of the most dangerous shortages facing this country was a shortage of powder. We must have a very much larger supply of nitrogen for this purpose.

But we must also have more nitrogen for agriculture. The slogan of American agriculture today is *Food for Freedom.* For the coming year the Government has asked the farmers to increase substantially their output of needed foods. The farmer is in defense production, too.

Where does nitrogen come from? How do we get it? How much is there available?

You may think that you have very little personal contact with nitrogen, but, as a matter of fact, you are in contact with it now! It forms about 80 per cent of the air which you are breathing. Scientists have known it was there for a long time, but until the first World War, we did not know how to get it out of the air. Now, by various processes, we can take nitrogen out of the air, fix it in solution, and use it as synthetic nitrate or in other forms. The air, therefore, is one of the three principal sources of nitrogen.

A second source is sulphate of ammonia. When coal is burned to make coke, the gas that passes off is bubbled through a solution of sulphuric acid, forming sulphate of ammonia, which has a nitrogen content of about 20 per cent.

The third great source is natural nitrate of soda from Chile, which has a nitrogen content of 16 per cent. Chilean nitrate has been used for over 100 years in the United States, which is the largest single market. This nitrate has a special value in agriculture because it is a natural product; unlike the synthetic variety, natural Chilean nitrate contains as impurities small amounts of other plant food elements which are essential to plant growth. Chile's nitrate deposits lie in a 500-mile-long desert. At various times it has been reported that these deposits were reaching a state of exhaustion, but, as Mark Twain said about the news of his death, "The report was somewhat exaggerated." Chile's nitrate deposits are so immense as to be inexhaustible within any predictable period.

The three main sources of nitrogen, therefore, are Chilean nitrate, synthetic nitrogen from the air, and sulphate of ammonia. There are other nitrogen fertilizers sold in smaller quantities, but these three are the more important ones.

When the United States started upon its defense program, the supply from all three sources had to be increased. Sulphate of ammonia is a by-product of coke manufacture; coke is used in the steel industry; as the steel industry expanded its output, the quantity of coke, and its by-product, sulphate of ammonia, was necessarily enlarged. It will be about one-third greater this year than last.

As for synthetic nitrogen from the air, there is no way of increasing its manufacture ex-

(Continued on page 26)

November Crop Report

Crop yields in the country as a whole are still expected to average about the best on record but wet weather in practically all States west of the Alleghenies has caused some damage and so delayed the harvesting of late crops that there may be further losses in some areas if wet weather continues. In half a dozen Corn Belt States the rainfall in September and October was the heaviest on record for those two months taken together, and over considerable areas from Illinois to Texas rainfall in October ranged from 8 inches upward. In addition to the flooding of river bottoms and damage to standing crops there appears to have been rather widespread damage to hay and forage in stacks and shocks. The quality of beans and unharvested seed crops is smaller.

Crop	Total Production (in thousands) Average, 1930-39	1940	Preliminary 1941[1]
Corn, all, bu.	2,307,452	2,449,200	2,675,373
Wheat, all, bu.	747,507	816,698	961,194
Winter, bu.	569,417	589,151	684,966
All spring, bu.	178,090	227,547	276,228
Durum, bu.	27,598	34,776	44,490
Other spring, bu.	150,492	192,771	231,738
Oats, bu.	1,007,141	1,235,628	1,138,843
Barley, bu.	224,970	309,235	351,522
Rye, bu.	38,472	40,601	46,462
Buckwheat, bu.	7,315	6,350	6,392
Flaxseed, bu.	11,269	31,217	31,825
Rice, bu.	45,673	52,754	55,128
Grain sorghums, bu.	84,253	121,371	146,919
Hay, all tame, ton	69,650	86,312	85,733
Hay, wild, ton	9,083	8,844	10,965
Hay, clover and timothy,[2] ton	24,587	29,287	25,678
Hay, alfalfa, ton	24,907	30,578	33,178
Bean, dry edible, 100-lb. bag	13,297	16,074	17,940
Peas, dry field, bu.	4,371	3,812	7,817
Soybeans for beans, bu.	35,506	79,837	111,300
Peanuts,[3] lb.	1,063,374	1,734,340	1,474,690
Potatoes, bu.	370,045	397,722	376,701
Sweet potatoes, bu.	73,208	61,998	70,844
Tobacco, lb.	1,394,839	1,451,966	1,267,404
Sorgo sirup, gal.	13,145	11,865	11,877
Sugarcane for sugar, ton	4,729	4,268	5,626
Sugarcane sirup, gal.	21,948	14,149	19,596
Sugar beets, ton	9,284	12,192	10,130
Broomcorn, ton	41	41	42
Hops, lb.	[4]34,784	[4]42,552	40,552
Apples, com'l crop, bu.	[4]125,310	[4]114,391	126,121
Peaches, total crop, bu.	[4]54,356	[4]54,430	69,659
Pears, total crop, bu.	[4]27,278	[4]31,622	30,820
Grapes,[5] ton	[4]2,264	[4]2,544	2,651
Pecans, lb.	64,676	88,426	84,759

[1] For certain crops, figures are not based on current indications, but are carried forward from previous reports.

[2] Excludes sweet clover and lespedeza.

[3] Picked and threshed.

[4] Includes some quantities not harvested.

[5] Production includes all grapes for fresh fruit, juice, wine, and raisins.

Harvesting of corn has been proceeding under difficulties in central Illinois, southern Iowa, northern and western Missouri and eastern Kansas but, except where losses have been heavy, the yields of corn being harvested are quite generally exceeding expectations, particularly where hybrids are being extensively used. The yield of corn per acre, now estimated at 31.1 bushels would be the second highest on record and the crop is estimated at 2,675 million bushels. This is 2 per cent above the forecast of a month ago and the largest corn crop since 1932.

Due chiefly to weather damage and harvesting losses, prospects for rice have been reduced 5 per cent and for grain sorghums 3 per cent. The estimate for beans has been reduced only 2 per cent but all States except New York report the quality lowered by October rains. Potatoes were favored in some northern areas by the absence of frost till late in October but on November 1st more than the usual acreage remained to be harvested in areas where freezing weather may soon prevent digging. The estimate of potato production has been raised slightly to 377 million bushels, indicating about an average crop. The harvesting of soybeans has been greatly delayed but a record crop of 111 million bushels is still expected. The harvesting of sugar beets has been made difficult by muddy fields; prospects on November 1st were for more than 10 million tons, or a little more than average production, but some unharvested beets are threatened by freezing weather.

Estimates of vegetables grown for canning and processing show new high records for corn, peas and tomatoes and a total for principal kinds that is more than 20 per cent above previous records. This increase more than offsets the small decrease shown in the production of commercial vegetables and truck crops grown for market. Preliminary reports on the vegetables now being grown in the South and Southwest for marketing during the winter and early months of 1942 do not yet indicate any marked change from total supplies from the same areas last season. The acreages planted show some reduction but losses were rather heavy last season.

Adding together the production indications for the various groups of crops shows unusually large tonnages of food grains, beans, peas and peanuts plus about average production of potatoes, sweet potatoes, and sugar and sirup crops. Fruits will show record or near-record production and commercial vegetables will

(Continued on page 20)

October Tag Sales

Fertilizer sales in 17 States in October as indicated by the sale of tax tags amounted to 183,000 tons, according to reports by State control officials to The National Fertilizer Association. This is the smallest tonnage reported for the month since 1938. However, October sales are relatively small, accounting for only about 4 per cent of the annual total. Although Florida tonnage was only slightly larger than a year ago, it accounted for 36 per cent of total sales for the month.

Aggregate sales in the first ten months of the year were 5 per cent larger than in the corresponding period of 1940, the result of rises in both the South and the Midwest. Eleven of the southern States and three of the midwestern States have reported larger sales this year to date than last.. The principal increases were in Oklahoma, Illinois, Arkansas, Texas, and Florida.

Fertilizer consumption will no doubt reach a new all-time peak in 1941. Farm income is still rising substantially, the Government's food production program calls for a wider use of fertilizer, and fertilizer prices have not increased greatly.

On November 15th, the commodity price index stood at an average of 116.4, taking 1935-1939 prices as 100. In this table, fertilizer prices were 107.5, with fertilizer materials showing 114.9.

SEPTEMBER SULPHATE OF AMMONIA PRODUCTION SLIGHTLY LOWER

The production of by-product sulphate of ammonia and ammonia liquor during September showed decreases of 1.2 and 5.6 per cent respectively from the output of the previous month, according to the current figures of the U. S. Bureau of Mines. This can be attributed to the difference of one day in the length of the two months. The sulphate of ammonia figures, however, fell slightly below the figures for September, 1940, the first time in many months that there has not been an increase over the corresponding month of the previous year. Shipments of sulphate are increasing each month, with a corresponding decrease in stocks on hand at the end of the months. The tabulated figures are as follows:

	Sulphate of Ammonia Tons	Ammonia Liquor Tons H_3 Content
Production:		
September, 1941	61,676	2,537
August, 1941	62,417	2,687
September, 1940	62,573	2,425
January-September, 1941	555,033	23,675
January-September, 1940	526,924	20,708
Shipments:		
September, 1941	64,594	2,800
August, 1941	62,095	2,951
September, 1940	60,488	2,543
Stocks on Hand:		
September, 1941	39,660	837
August, 1941	42,686	820
September, 1940	40,243	1,185
August, 1940	38,381	1,035

FERTILIZER TAX TAG SALES

State	October 1941 Per Cent of 1940	October 1941 Tons	October 1940 Tons	October 1939 Tons	January-October 1941 Per Cent of 1940	January-October 1941 Tons	January-October 1940 Tons	January-October 1939 Tons
Virginia	75	21,745	28,841	22,457	101	383,939	381,228	406,347
N. Carolina	113	25,088	22,267	28,637	102	1,039,961	1,018,712	1,162,031
S. Carolina	52	6,875	13,169	11,890	104	684,462	656,653	656,934
Georgia	127	12,740	10,004	1,100	105	764,374	728,123	672,612
Florida	101	66,533	65,784	64,936	112	500,049	448,148	410,421
Alabama	159	6,750	4,250	1,450	100	571,750	570,550	550,600
Mississippi	88	9,175	10,393	22,125	109	332,792	304,688	299,971
Tennessee	74	12,103	16,347	12,545	96	140,441	146,238	130,344
Arkansas	22	1,100	5,000	6,400	115	114,200	98,950	72,022
Louisiana	53	4,000	7,544	17,100	110	164,510	149,975	154,288
Texas	40	2,075	5,145	1,070	114	131,301	114,984	89,407
Oklahoma	636	350	55	355	164	10,950	6,663	7,022
Total South	89	168,534	188,799	190,065	105	4,838,729	4,624,912	4,611,999
Indiana	77	2,323	3,031	5,500	111	334,860	302,381	262,458
Illinois	59	1,947	3,313	4,032	121	61,555	51,073	42,669
Kentucky	102	7,864	7,706	6,813	99	121,976	122,590	118,042
Missouri	24	695	2,895	3,475	99	86,734	87,494	67,556
Kansas	148	1,225	825	230	109	19,011	17,496	14,296
Total Midwest	79	14,054	17,770	20,050	107	624,136	581,034	505,021
Grand Total	88	182,588	206,569	210,115	105	5,462,865	5,205,946	5,117,020

Basic Experience in Selection of Salesmen*

By H. C. ANDERSON

General Sales Manager, The Globe-Wernicke Company, Cincinnati, Ohio

ONE of the problems generally disturbing to sales executives today is that too few young people are interested in sales work as a career. This feeling I have confirmed from discussions with sales managers who have given thought to the condition. Many of them are convinced that it can be traced to two causes. The first is that sales management has not done its best job in handling the functions of sales work, and the second is that instructors engaged in teaching marketing and similar courses are themselves not impressed with the advantages of a sales career.

While attending a meeting of the Louisville Sales Executives' Club last fall, I heard one member state that at graduation time he had posted on the bulletin boards of the leading high schools in Louisville an announcement of his interest in talking with graduates considering a sales career. Although practically every graduate was looking for a job, not one came to him.

Another illustration of this attitude appeared when I inquired of a recent graduate of a leading university if he contemplated sales work. He told me that he had no thought of it and that very few of his friends were enthusiastic about selling.

It seems to me that it is about time for sales management to take this important problem under advisement. Last January I discussed the subject at the annual convention of the Northeastern Retail Lumberman's Association. My talk was based on a questionnaire sent widely to lumber dealers, and the results of that survey are interesting as to the general picture and as to the details, particularly in connection with the selection of salesmen.

From answers to the question as to how many salesmen were employed, I learned that 6 per cent had none; 16 per cent had one each; 26 per cent, two; 25 per cent, three; 11 per cent, four; and 16 per cent, five or more. The average was approximately three salesmen to a concern.

The second question asked the dealers if they were satisfied with their present sales organization. Of those who answered, 56 per cent said "no," 35 per cent said "yes," and 9 per cent said that they did not know. The large number of negatives makes it quite evident that there is room for improvement in selecting representatives.

The third question was: "How many of your present salesmen would you replace with better men?" The answer showed that 43 per cent would make no changes; 16 per cent would change one man; 12 per cent would change two; 9 per cent would change three or more, and 20 per cent did not know. Better selection could improve this condition.

Selection a Difficulty

The next question asked how many additional *good* salesmen could be used. As to this point, 53 per cent needed none; 28 per cent, one; 8 per cent, two; and 11 per cent, three to five. With 47 per cent of the dealers needing salesmen and with unemployment still a problem, it is obvious that the selection of salesmen must be a difficult task.

The fifth question inquired where the successful salesmen had been obtained. The results were interesting, showing that 50 per cent obtained salesmen from within their own organizations; 22 per cent found them in other industries; 15 per cent obtained them from schools—college, high school, and business school; and 13 per cent from competitors.

The next question asked the dealers to check in the order of importance the five qualities which they considered vital in selecting salesmen. The answers showed that sales managers looked for honesty, knowledge of business, willingness to work, personality, intelligence, resourcefulness, habits, alertness, sales experience, and courage.

"Why do your salesmen fail?" brought a varied response. Lack of sales qualifications accounted for 35 per cent of the failures; lack of industry, 23 per cent; insufficient training, 17 per cent; lack of supervision, 14 per cent; bad habits, 10 per cent; and lack of experience, 1 per cent. In this connection, it is interesting to note that similar surveys in general business place lack of industry first.

* Reprinted from the Executives Service Bulletin, Metropolitan Life Insurance Co., New York City.

The next question relates to the average cost of developing a new salesman until he can pay his own way. The approximate average was $930, based on these figures: 10 per cent, $500 or less; 38 per cent, $500 to $1,000; 30 per cent, $1,000 to $1,500; 5 per cent, $1,500 to $2,000; and 17 per cent did not know. Some variation may be attributed to the different types of compensation plans used by the various companies.

The time element was covered in the question, "How long does it take to develop a new salesman until he pays his own way?" The answers showed that 3 per cent needed 3 months or less; 12 per cent, 3 to 6 months; 45 per cent, 6 to 12 months; 22 per cent, 12 to 18 months; 2 per cent, 18 to 24 months; 7 per cent, over 24 months; and 9 per cent did not know. The average is about 12 months. These results line up very well with other surveys, although some of these show an average of 18 months. The differential is very likely traceable to the number of items in a line. The Globe-Wernicke line, for instance, consists of more than 4,000 items.

The 10th question was very interesting: "What is your batting average in selecting good salesmen?" The answer showed that 9 per cent rated themselves 1.000; 13 per cent, .500; 23 per cent, .333; 16 per cent. .250; 16 per cent, .200; 3 per cent, .167; 7 per cent, .111; and 13 per cent did not know. The average was about .250.

The survey produced very arresting facts that can be applied to the solution of the problem that faces any sales manager in selecting salesmen. Most executives will agree that the success of big organizations is in a large part due to an outstanding job in selecting personnel, not only in the sales department but throughout the business. Such companies necessarily discarded the hit-or-miss plan of hiring people.

Suggested Qualifications

In setting up a program for selecting salesmen, I recommend, based on my own experience in this organization, that the sales executive look for these qualifications in the order given:

1. *Honesty and Good Habits.* Unless a man is honest and has good habits, no employer will be willing to consider him, regardless of his other qualifications.

2. *Health.* Enthusiasm is needed in selling, and good health is essential.

3. *Willingness to Work.* Every survey shows that this is one of the primary reasons why salesmen fail, so we make it a point to satisfy ourselves that the candidate is willing to work before we add him to our organization.

4. *Willingness to Study and Take Suggestions.* Unless a man is willing to study, he will never be able to do the present-day selling job. Years ago selling was pretty much on the order-taking basis, but today salesmen must have creative ideas.

5. *Sales Qualifications.* After we have satisfied ourselves on the first four items, we consider such sales qualifications as personality, intelligence, appearance, resourcefulness, and the other characteristics that can be regarded as standard.

Most of the Globe-Wernicke salesmen come from one of two sources. We obtain them from universities or colleges, where we interview graduates with background of courses in business administration, industrial engineering, or accounting; and others are referred by dealers who sell our merchandise.

In interviewing a prospective salesman, we try to make sure that he has a clear picture of exactly what selling involves. We make it understood that selling is like any other line of work. We tell the prospect that there is a period of apprenticeship, that it takes from three to five years to develop a man, and that unless he is willing to spend that much time with the foreknowledge that earnings during the period will be low, he should give no further consideration of our company. We talk to him in terms of 5, 10, 15 years because we want him to get away from the thought of just another job; we want to interest him in making selling his career.

The interview is based upon an application blank that was prepared by the applicant. Following its receipt, we obtain references from previous employers on a form embracing 10 questions related to character qualifications. In many cases we supplement this information with a moral risk report. With these data as background, we are enabled to consider men who are honest and have good habits. Also, before a man is added to the sales organization, we ask him to take a health examination at our expense.

During this preliminary conference we acquaint the prospect with the program for training him during his apprenticeship, stressing the fact that our motto is "Grow or Go." We always have in mind the elimination of the applicant attracted to sales work because he thinks it is a snap.

We then continue our examination by giving him an I.Q. test, a sales vocational interest

(Continued on page 22)

THE AMERICAN FERTILIZER
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PIONEER JOURNAL OF THE FERTILIZER INDUSTRY

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Government Committee to Investigate Northwestern Phosphate

On November 12th, Secretary of the Interior Ickes announced the formation of a consulting committee on Northwestern phosphates, made up of representatives from the Departments of Interior and Agriculture, the TVA, and others in the field.

After preliminary organization work, the committee will travel to the territory to be studied. Secretary Ickes has asked them to investigate the possibilities of both low-cost fertilizer production and low-cost distribution to the farmers of the Northwest.

Among the various tasks assigned to the committee are that of securing estimates of fertilizer consumption in the four Northwestern States, by class and utilization, basing these estimates on price levels which may be obtained by the establishment of a Northwestern fertilizer plant and distribution system, and on quantities sufficient to meet the needs of the farming areas that can be served.

The committee will also make a compilation of technical data relating to location, plant size, costs and other pertinent factors.

The committee will make recommendations relative to the distribution of fertilizers on a cost basis, and as to possibilities of establishing fertilizer plants in coordination with industrial establishments now located in the Northwest, since some by-products of chemical companies are essential parts of fertilizers.

The membership of the committee follows: Chairman, Stephen Raushenbush, chief of the branch of planning and research, Division of power, Department of the Interior; Robert M. Salter, head soil scientist in charge of the Division of Soil and Fertilizer Investigations, Department of Agriculture; Dr. Harry A. Curtis, dean, College of Engineering, University of Missouri; Arthur M. Miller, director of chemical engineering, Tennessee Valley Authority; Ivan Bloch, chief of the market development section, Bonneville Power Administrator; Dr. E. G. Peterson, president, Utah State Agricultural College, and chairman of the phosphates committee. National Land Grant Colleges and University Association; Dr. William A. Schoenfeld, dean, Oregon University; Joel David Wolfsohn, assistant commissioner, General Land Office; A. C. Adams, president, Spokane Bank for Cooperatives, and Dr. Y. F. Yancey, director, Northwest Experimental Station, Bureau of Mines. Goodrich Lineweaver will act as secretary to the committee.

Continued Rise in Superphosphate Production

The consistent rise in superphosphate output which began in late 1939 continued in September. Production at plants of acidulators which report to The National Fertilizer Association was the largest on record for any September, exceeding September 1940 by 19 per cent. The gain over last year was about evenly distributed between the northern and southern areas. Production during the month was a little below August, following the usual seasonal pattern.

The increase in production has been accompanied by an increase in shipments, so there has been no abnormal accumulation of stocks. Total stocks at the close of September, including superphosphate in base and mixed goods as well as bulk superphosphate, were slightly smaller than a year ago. Stocks of bulk were sizeably smaller, but the effect of this decline was largely offset by a rise in base and mixed goods.

In relation to the prospective demand, stocks are probably at abnormally low levels. A new peak in superphosphate consumption will likely be witnessed in 1942.

Superphosphate Production, Shipments, and Stocks for September and January-September, 1941 and 1940

Expressed throughout in equivalent tons of 16% A.P.A. Based on reports by acidulators to The National Fertilizer Assn.†

September	United States 1941	United States 1940
Stocks—First of month:		
Bulk superphosphate	829,326	924,023
Base & mixed goods	476,242	424,203
Production:		
Bulk superphosphate	313,999	269,590
Base & mixed goods	16,689	8,513
Total Production	330,688	278,103
Other Receipts*	26,929	23,390
Book Adjustments	—3,341	—2,339
Total Supply	1,659,844	1,647,380
Shipments:		
Superphosphate:		
To mixers	97,870	108,689
To other acidulators	52,568	28,388
To consumers, etc.	111,946	113,485
Total Superphosphate	262,384	250,562
Base & mixed goods	123,263	120,977
Total Shipments	385,647	371,539
Stocks—End of month:		
Bulk superphosphate	864,376	953,306
Base & mixed goods	409,821	322,535
Total Stocks	1,274,197	1,275,841

Accumulated Production and Shipments for January-September

	United States 1941	United States 1940
Production:		
Bulk superphosphate	2,903,765	2,624,436
Base & mixed goods	101,599	100,036
Total Production	3,005,364	2,724,472
Shipments:		
Superphosphate:		
To mixers	1,145,936	1,087,983
To other acidulators	525,766	378,906
To consumers, etc.	937,107	719,017
Total Superphosphate	2,608,809	2,185,906
Base & mixed goods	1,296,290	1,221,689
Total Shipments	3,905,099	3,407,595

† Represents approximately 85 per cent of total production.
* Includes inter-company transfers.
Base includes wet and/or dry base.

AGRONOMISTS DISCUSS FERTILIZERS

The Committee on Fertilizers of the American Society of Agronomy held an all-day meeting in Washington on November 11th. Nearly 200 agronomists representing all sections of the country were in attendance. In addition to the reports of subcommittees there was a round-table discussion which lasted all afternoon on the use of plant analysis in diagnosing the needs of crops.

In reporting to the Society of Agronomy, Professor Robert M. Salter, chairman of the committee, stated that the subcommittee on fertilizer ratios recommends that agronomists in the various States cooperate closely with the fertilizer industry in work relating to grade reduction and recommendations; that the subcommittee on malnutrition symptoms has, through publication of "Hunger Signs in Crops," to a large extent completed its work, and that there is now need for a closed correlation between soil testing, plant tissue testing, and plant symptoms. He therefore recommended that the subcommittees on symptoms of malnutrition and soil testing be discontinued and that a new subcommittee be set up which would consider all of the factors involved in diagnosis.

WOODRUFF FERTILIZER MOVES PLANT

The Woodruff Fertilizer Works have moved their factory and offices from Orange, Conn., to new buildings on Sackett Point Road, North Haven, Conn. The new plant, which was constructed during the summer, is located about 15 miles from the old factory. The officers of the company include James R. Rossman, president, and Frank C. Woodruff, vice-president.

November Cotton Report

A United States cotton crop of 11,020,000 bales is forecast by the Crop Reporting Board of the United States Department of Agriculture, based upon indications of November 1, 1941. This is a decrease of 41,000 bales from the forecast as of October 1st, and compares with 12,566,000 bales ginned in 1940, 11,817,000 bales in 1939, and 13,246,000 bales, the 10-year (1930-39) average. The indicated yield per acre of 233.3 pounds is lower than the yield of 252.5 pounds in 1940 and 237.9 pounds in 1939 but higher than the 10-year (1930-39) average of 205.4 pounds.

In Alabama, Mississippi, Arkansas, Louisiana, and Texas, there was too much rainfall during October and as a result prospective production was reduced by 184,000 bales. In North Carolina, Tennessee, and Missouri, however, rainfall was light and temperatures were above normal; this facilitated harvesting and increased prospective production in these States by 135,000 bales. In other States, only minor changes in prospects have occurred since October 1st.

In Texas, Oklahoma, New Mexico, Arizona, and California, the proportion of the crop ginned to November 1st is much less than average, which leaves more of the crop than usual subject to possible damage from freezes or other adverse weather conditions. On the other hand, in all States east of Oklahoma and Texas, ginning is much farther advanced than usual at this date.

The report of the Bureau of the Census shows 7,964,325 running bales (counting round as half bales) ginned from the crop of 1941 prior to November 1, compared with 9,085,870 for 1940 and 10,079,112 for 1939.

In yield per acre, as indicated by the 1941 crop, California led all other states with an average production of 619 pounds per acre. This was followed by Missouri, 583 pounds; New Mexico, 467 pounds; Arizona, 437 pounds. In the States where cotton is a major crop, the figures show Tennessee, 420 pounds; Arkansas, 341 pounds; North Carolina, 339 pounds; Mississippi, 288 pounds; Oklahoma, 214 pounds; Alabama, 206 pounds; Texas, 168 pounds; South Carolina, 162 pounds; Georgia, 158 pounds; Louisiana, 146 pounds. For the entire country, the average crop was 233.3 pounds per acre.

State	Production (Ginnings)[1] 500 lb. gross wt. bales: Average, 1930-39 1,000 bales	1940 Crop 1,000 bales	1941 Crop Indicated Nov. 1 1,000 bales
Missouri	292	388	490
Virginia	33	25	26
N. Carolina	629	739	555
S. Carolina	824	966	400
Georgia	1,132	1,010	615
Florida	32	21	16
Tennessee	465	509	605
Alabama	1,145	779	790
Mississippi	1,585	1,250	1,445
Arkansas	1,281	1,501	1,450
Louisiana	703	456	320
Oklahoma	750	802	725
Texas	3,766	3,234	2,771
New Mexico	100	128	115
Arizona	159	195	218
California	333	545	455
All other	16	18	24
United States	13,246	12,566	11,020
Sea Island[2]	...	4.0	2.9
Amer. Egyptian[2]	17	33	72
Lower Calif. (Old Mexico)[3]	38	60	100

[1] Allowances made for interstate movement of seed cotton for ginning.

[2] Included in State and United States totals. Sea Island grown principally in Georgia and Florida. American Egyptian grown principally in Arizona.

[3] Not included in California figures, nor in United States total.

BRADLEY & BAKER

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1252 West Beaver Street
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FERTILIZER MATERIALS MARKET

NEW YORK

Materials Market Shows Little Activity. Some Export Sulphate of Ammonia Being Shipped. Chesapeake Fishing Season Ended.

Exclusive Correspondence to "The American Fertilizer."

NEW YORK, November 18, 1941.

Raw materials in the fertilizer market have been marking time with practically no activity. Many members of the industry from this section are attending the National Fertilizer Association Convention in Atlanta this week.

Sulphate of Ammonia

While the scarcity continues in sulphate of ammonia, nevertheless offers can be obtained on this material for export when buyers are serious, and considerable tonnage of this material was loaded this week for export.

Nitrogenous

Nitrogenous material continues to move against contracts, but no new offerings have been in evidence.

Superphosphate

Superphosphate is in good demand. Production has been increased but demand at present seems to be larger than the present supply.

Fish Scrap

The season is officially closed and there will be no new production by the Chesapeake Bay factories until next May or June. However, the Carolina factories are operating and some business has been done for early shipment at $60.00 per ton in buyer's bags, f.o.b. Beaufort or Morehead City. Chesapeake Bay menhaden meal is strongly held at $70.00 per ton, f.o.b. Baltimore.

Dried Blood

New York City production sold within the past few days at $4.15 ($5.04½ per unit N) and although there are further bids in the market on this level, producers are asking $4.25 ($5.16½ per unit N). Trading in South America is at a standstill because of the lack of freight space, and quotations are merely nominal at $4.25 ($5.16½ per unit N), c.i.f., subject to seller's ability to arrange freight.

BALTIMORE

Little Demand Shown in Market. Sulphate of Ammonia Still Scarce. Fish Scrap Contracts Filled with No Excess Tonnage.

Exclusive Correspondence to "The American Fertilizer."

BALTIMORE, November 18, 1941.

The market on fertilizer materials is more or less routine in character without demand for raw materials of any moment.

Ammoniates.—The market on ground animal tankage is ruling easy in sympathy with the slacking up in demand for feeding purposes, and it is nominally $5.10 per unit of nitrogen and 10 cents per unit of B.P.L., f.o.b. Baltimore, with ground dried blood being quoted unchanged around $4.50 per unit of nitrogen.

Nitrogenous Material.—The market on this product continues nominally unchanged at $3.75 per unit of nitrogen, f.o.b. Baltimore.

Sulphate of Ammonia.—There is no change in the situation which continues firm, with producers unable to supply the demand. While the nominal market is $29.00 per ton, there is none to be had at this figure and, in fact, there is no re-sale material being quoted at all.

Nitrate of Soda.—As is usual at this time of the year, the demand is light and the market for delivery over the balance of the year unchanged. The Chilean material is quoted at $30.00 per ton in bulk; $33.00 per ton in 100-lb. bags and $32.40 in 200-lb. bags, f.o.b. warehouse Baltimore.

Fish Scrap.—Fishing on the Chesapeake Bay has now come to an end, and last sales were on the basis of $5.70 per unit of nitrogen and 10 cents per unit of B.P.L., f.o.b. fish factory, in bulk. It is reported that producers were able to fill practically all contracts booked subject to catch, and there is no unsold tonnage available at fish factories. Fish meal guaranteed 60 per cent protein continues to be quoted at $69.00 to $70.00 per ton, in 100-lb. bags, f.o.b. Baltimore.

FERTILIZER MATERIALS

■

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- DOUBLE SUPERPHOSPHATE
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- BONE MEALS
- POTASH SALTS
- DRIED BLOOD
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Nashville, Tenn.
New Orleans, La.
New York, N. Y.
Norfolk, Va.
Presque Isle, Me.
San Juan, P. R.
Sandusky, Ohio
Wilmington, N. C.

Superphosphate.—The situation of the market on this product continues unchanged, and producers quote $9.50 per ton of 2,000 lb., basis 16 per cent, for run-of-pile, and $10.00 for flat 16 per cent grade, both in bulk, f.o.b. Baltimore. It is reported that the production over the next six months is completely sold up and prices are subject to change without notice.

Bone Meal.—The market is dormant, and nominal quotation on 3 and 50 per cent steamed bone meal ranges from $37.00 to $38.00 per ton, while 4½ and 47 per cent raw bone meal continues to be quoted at $37.50 to $38.00 per ton of 2,000 lb., f.o.b. Baltimore.

Potash.—Deliveries are now being made against contracts previously booked, and it is anticipated that domestic producers will be able to take care of normal requirements of American fertilizer manufacturers.

Bags.—There has been practically no change in the market on burlap since last report, and the market for next spring ranges from $189.00 for early spring delivery to $185.00 for late spring season's business, for plain, new, 10 oz., basis 40 cut 54 in., f.o.b. Baltimore.

CHARLESTON

Fertilizer Organics Scarce with Prices Generally Steady. Short Supply of Superphosphate.

Exclusive Correspondence to "The American Fertilizer."

CHARLESTON, November 17, 1941.

Nitrogenous.—This material continues to be not very plentiful. Quotations are in the neighborhood of $2.90 to $3.00 ($3.52½ to $3.64½ per unit N), delivered southeastern ports for fall shipment.

Blood.—Domestic material is quoted around $4.35 ($5.29 per unit N), bulk, f.o.b. Chicago. Imported supplies can be obtained at $4.20 ($5.10½ per unit N), bagged, c.i.f., where freights can be obtained.

Fish Meal.—Offers are scarce and this material is being quoted at $70.00 per ton, f.o.b. Norfolk.

Cottonseed Meal.—Prices for the 8 per cent grade are $38.00 per ton, Memphis; $42.00 per ton, Atlanta.

Superphosphate.—This material continues to get tighter.

Dry Rendered Tankage.—Material ranging from 45 to 50 per cent is quoted at $1.10 per unit of protein, c.i.f. New Orleans.

Bone Meal.—The 4½ and 50 per cent grade is priced at $39.50 per ton, c.i.f. Tampa.

CHICAGO

Fertilizer Organic Market Quiet with Later Activity Expected. Feed Material Prices Fairly Steady.

Exclusive Correspondence to "The American Fertilizer."

CHICAGO, November 17, 1941.

Quiet continues in the western organic market. Excepting for sales of nitrogenous tankage to the far west, no trades are reported. Southern manufacturers show little inclination to reach for supplies at this time, but sellers anticipate a renewed inquiry in the near future.

The feed market is also quiet, consuming demand being slow. Raw material is not excessive and prices are holding fairly steady.

Nominal prices are as follows: High grade ground fertilizer tankage, $3.50 to $3.75 (4.25½ to $4.56 per unit N) and 10 cents; standard grades crushed feeding tankage, $4.50 to $4.75 ($5.47 to $5.77½ per unit N) and 10 cents; blood, $4.50 to $4.60 ($5.47 to $5.59 per unit N); dry rendered tankage, $1.00 to $1.05 per unit of protein, Chicago basis.

Manufacturers' Sales Agents for **DOMESTIC**

Sulphate of Ammonia

Ammonia Liquor :: Anhydrous Ammonia

HYDROCARBON PRODUCTS CO., INC.

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TENNESSEE PHOSPHATE

Rains Alleviate Power Shortage but Lack of Transportation Facilities Feared. Improvements in Hoover & Mason Plant.

Exclusive Correspondence to "The American Fertilizer."

COLUMBIA, TENN., November 17, 1941.

A period of gorgeous November weather has been in evidence for the past two weeks, and while it has not helped out the badly needed moisture in soil, creeks and rivers, it has made all vegetation respond to its influence.

Rains in other sections have somewhat alleviated the fears of power shortage. The shortage of water for washing phosphate rock has not yet seriously affected operating phosphate companies, except by seriously depleting the large stocks of washed rock which they try to keep on hand at all times to guard against such situations.

It is still a question as to whether the stocks on hand will last until the rains come, and prudent consumers are not holding off any shipments of material they will surely want later. They realize that in addition to the question of water supply for increasing stocks, there will be the reduction in productive capacity if the curtailment of electric power finally goes into effect. The Railroad strike may also cut off transportation at any moment and the exercise of priorities may at any time find this field confronted with the bugaboo of car shortage, because the flow of empties has been turned into other directions.

Radical changes in the intake end of the Hoover & Mason washing plant are nearing completion and enough can now be seen to make it certain that this plant, long noted for its superiority, is going to be greatly improved. For many years the construction in use has been able to make the best possible product of any one grade, but it is now being made possible to produce three grades, each one of equal dependability as to uniformity, so that customers can be readily supplied with any one of the three that may be desired.

The well known profile of the Hoover & Mason plant will now be completely changed by removal of both the high towers and blast furnace skips ahead of the washing and drying plants, both have been replaced by belt conveyors from ground storage which permits both selective washing and selective drying, as well as selective mining for adjusting grade to desired figure.

It is reported that the AAA expects to extend its grant-of-aid program for rock phosphate as well as superphosphate all over the state of Illinois in 1942, instead of confining it to eleven counties as in 1941. This is quite in contrast to its actions in the large fertilizer-using states where it refuses to allow even benefit payments for rock phosphate.

PHILADELPHIA

Market Almost Totally Inactive. Prices Remain Firm in Spite of Lack of Inquiry.

Exclusive Correspondence to "The American Fertilizer."

PHILADELPHIA, November 19, 1941.

The markets on fertilizer materials remains stagnant. There is practically no inquiry and consequently no contracting, and quotations are nominal.

Sulphate of Ammonia.—None obtainable at first hands and resale lots are held at fancy figures.

Nitrate of Soda.—No changes since last report.

Blood and Tankage.—Prices are firm but we hear of no contracting.

Fish Meals.—Nominal market is firm but buyers show no interest.

Low-Grade Ammoniates.—These are very scarce and held high.

Bone Meal.—There is some little interest.

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The more manufacturers feature fertilizers for cover crops containing the right proportion of potash, the greater service they are doing to the farmers who use their products, and the more new business they are creating for themselves. The value of potash in connection with soil-building crops is being demonstrated throughout the country, and potash as recommended by local agricultural authorities should be included in the mix.

Many manufacturers specify "Sunshine State" Potash because it can be depended upon for uniform analysis and easy blending.

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ATLANTA

Southern Convention Well Attended. Stable Superphosphate Market Expected. Vegetable Meals Lower.

Exclusive Correspondence to "The American Fertilizer."

ATLANTA, November 20, 1941.

The National Fertilizer Association meeting here in Atlanta the early part of the week was well attended and all indications point towards a stable fertilizer year. Shortages in certain materials are becoming apparent but this does not mean that we will run into the same stringencies that we did during the first World War. By shortages we mean that there will be a rationing of the supply with no surpluses. This is now becoming apparent in certain of the minerals, ammonia liquors, etc.

The healthiest sign on the horizon at the moment is the very strong position of superphosphate. Where we have a stable superphosphate market, we usually have a good fertilizer year. The production is heavy but sales to Government agencies have also been heavy and there is no burdensome surplus hanging over the market at the present time.

Quite a number of buyers are taking advantage of the present slack demand in vegetable meals to cover their remaining requirements as they apparently feel that the present situation will not prevail for long.

The various markets are quoted as follows:

Blood.—South American, $4.25 ($5.16½ per unit N), c.i.f.; Chicago packers' material, $4.75 ($5.77½ per unit N), Chicago.

Domestic Nitrogenous Tankage.—$2.35 ($2.85½ per unit N), western producing points.

Imported Tankage.—Nothing offered.

Menhaden Machine Dried Scrap.—$65.00 sellers' bags, Norfolk/Baltimore.

Acidulated Fish.—$3.85 ($4.68 per unit N) and 50 cents, f.o.b. producing points.

Sulphate of Ammonia.—Unchanged with limited offerings.

Nitrate of Soda.—Unchanged.

Cottonseed Meal.—Prime 8 per cent, Memphis; southeastern mills, $39.00.

NOVEMBER CROP REPORT

(Continued from page 8)

show a new high total. Feed and forage supplies are ample for this season's needs even with liberal feeding. The cotton crop was unusually small and tobacco production was below average but supplies of both appear ample for current needs. The reduced production of cottonseed is largely offset by the increased production of soybeans.

Although it is best not to draw too positive conclusions until harvesting has been completed and the final check-up of acreages and production has been made, the present indications are that crop production will be close to top records, notwithstanding the shortage of labor that is beginning to be felt and recent weather difficulties. Considering the reserves of cotton and grain on hand, total supplies of agricultural products are probably the largest ever.

CLASSIFIED ADVERTISEMENTS

Advertisements for sale of plants, machinery, etc., and for help and employment, in this column, same type as now used, 60 cents per line, each insertion.

FOR SALE

FOR SALE—FERTILIZER PLANT. Stedman Dry Mixing Plant complete with Bag Printing Press. Capable of turning out as much as 10,000 tons of mixed goods per season. Address, VICTOR COTTON OIL COMPANY, GAFFNEY, S. C.

NITROGANIC TANKAGE

Let us tell you about this new fertilizer material. We solicit inquiries.

H. J. BAKER & BRO.

271 Madison Ave., NEW YORK

BALTIMORE CHICAGO SAVANNAH TAMPA

A Complete Service

THE strategic factory locations of the American Agricultural Chemical Company, as shown on the accompanying map, assure prompt, dependable service for the complete line of products listed below.

We manufacture all grades of Commercial Fertilizers, Superphosphate, Agrinite Tankage, Bone Black, Bone Black Pigments (Cosmic Black), Dicalcium Phosphate, Monocalcium Phosphate, Gelatin, Glue, Ground Limestone, Crushed Stone, Agricultural Insecticides (including Pyrox, Arsenate of Lead, Calcium Arsenate, etc.), Trisodium and Disodium Phosphate, Phosphorus, Phosphoric Acid, Sulphuric Acid, Salt Cake, and we are importers and/or dealers in Nitrate of Soda, Cyanamid, Potash Salts, Sulphate of Ammonia, Raw Bone Meal, Steamed Bone Meal, Sheep and Goat Manure, Fish, Blood and Tin-Tetrachloride. We mine and sell all grades of Florida Pebble Phosphate Rock.

FACTORIES

Alexandria, Va.
Baltimore, Md.
Buffalo, N. Y.
Carteret, N. J.
Cayce, S. C.
Chambly Canton, Quebec, Can.
Charleston, S. C.
Cincinnati, Ohio
Cleveland, Ohio
Detroit, Mich.
East Point, Ga.
East St. Louis, Ill.
Greensboro, N. C.
Havana, Cuba
Henderson, N. C.
Montgomery, Ala.
Norfolk, Va.
No. Weymouth, Mass.
Pensacola, Fla.
Pierce, Fla.
Port Hope, Ont., Can.
Presque Isle, Me.
Savannah, Ga.
Searsport, Maine
South Amboy, N. J.
Spartanburg, S. C.
West Haven, Conn.
Wilmington, N. C.

The AMERICAN AGRICULTURAL CHEMICAL Co.

50 Church Street, New York City

SALES OFFICES

Alexandria, Va.
Baltimore, Md.
Buffalo, N. Y.
Carteret, N. J.
Charleston, S. C.
Cincinnati, Ohio
Cleveland, Ohio
Columbia, S. C.
Detroit, Mich.
East Point, Ga.
East St. Louis, Ill.
Greensboro, N. C.
Havana, Cuba
Henderson, N. C.
Houlton, Me.
Laurel, Miss.
Montgomery, Ala.
Montreal, Quebec, Can.
New York, N. Y.
Norfolk, Va.
No. Weymouth, Mass.
Pensacola, Fla.
Pierce, Fla.
Port Hope, Ont., Can.
St. Paul, Minnesota
Savannah, Ga.
Spartanburg, S. C.
Wilmington, N. C.

BASIC EXPERIENCE IN SELECTION OF SALESMEN

(Continued from page 11)

test, and a personality test. We analyze this material and have two or more persons interview him two or more times. These tests reveal many points that cannot be obtained through conversation or observation during an interview, but the results are not used as the sole basis for determining sales qualifications. The employer must always exercise his own good judgment in making a selection.

Once the applicant is employed, our first step is to find out just which of the several divisions of our sales department is most interesting to him, *i. e.*, library equipment, filing supplies and stationery, visible records, steel shelving, partitions, or sales desks.

We use a 15-bulletin training course on the fundamentals of office equipment layout, and also a 14-bulletin course covering indexing systems. The new employee is requested to finish both of these within a definite scheduled period. Further, he is encouraged to read trade magazines and business services that are channeled through the sales department, and we encourage him, too, to continue his education by taking a course at the evening school of the University of Cincinnati.

Another thing we do is to give the trainee an opportunity to participate in a one-hour sales meeting held weekly for the members of the Home Office sales organization. After the new employee has been on the job for three or four weeks, we arrange for him to lead the discussion at one of those meetings. This gives him experience and affords us an opportunity to observe at first hand his ability to express himself and to get a message across to a group.

Training Program Thorough

During the first two or three years the newcomer works in the several divisions of the sales department. We then arrange with one of our dealers for the salesman to spend at least a year in a dealer's sales organization, doing this because our company is committed to a policy of dealer distribution. Following this training the salesman is assigned to a territory, or he may be made a junior salesman within a territory. He is now on his own, but we continue to give him training material on the various items in our line.

Going about the country I observe that, in far too many cases, management does not pay sufficient attention to the problem of their sales representatives. Dealers, for instance, are spending their money on new delivery trucks, on new equipment, and in redecorating their offices, and are doing little or nothing in the way of getting better salesmen, despite the fact that in many organizations the salesman is responsible for as much as 80 per cent of the business while only 20 per cent or less is transacted in the store. Selection of salesmen is a major problem of sales management and, in our experience, is one that responds to treatment when given the time and attention it merits.

MAGNESIUM FROM SEA WATER REPLACES IMPORTED PRODUCT

Magnesium recovered from sea water as a by-product in the manufacture of salt is being used by farmers to replace magnesium fertilizers formerly imported from Germany, C. W. Whittaker and W. H. Ross, department fertilizer investigators, reported to the American Society of Agronomy and the Soil Science Society of America, meeting in Washington. Magnesium is one of the so-called "secondary" elements vital to plant growth. Many soils lack sufficient quantities of this element for healthy plant growth.

Manufacturers in the vicinity of San Francisco are using sea water to produce magnesium oxide for fertilizers. Others at Freeport, Texas and at Lake Charles, Louisiana are now using sea water to manufacture magnesium metal for defense industries. Other factories in California and in the Southwest are utilizing natural deposits for the production of magnesium. Because of its many important uses in defense, magnesium is now listed as one of the critical metals.

Other sources of magnesium for use in fertilizers listed by Whittaker and Ross include domestic sulphate of potash-magnesia, the

Stedman
FERTILIZER PLANT
EQUIPMENT

Dependable for Fifty Years

All-Steel Self-Contained Fertilizer Mixing Units
Batch Mixers—Dry Batching
Pan Mixers—Wet Mixing
Swing Hammer and Cage Type Tailings Pulverizers
Vibrating Screens
Dust Weigh Hoppers
Acid Weigh Scales

STEDMAN'S FOUNDRY & MACHINE WORKS
AURORA, INDIANA, U. S. A. Founded 1834

Here's a PROFIT-MAKER

For Firms that sell to Vegetable and Fruit Growers

If a salesman walked into your office and told you he had a product that will earn you a good profit—that is easy to sell—that means a steady business in repeat sales—that is nationally advertised—you would probably be interested and would want to ask questions.

This advertisement is that salesman.

The product is Pyrocide Dust, the fastest growing insecticide in America today. Introduced in 1935, it has been tested and used for more than six years with constantly growing acceptance.

Pyrocide Dust is now being sold by our licensees at a profit. There is no supply problem. The price for 1942 will actually be lower than in 1941. The license agreement under which we operate is being offered to reputable firms with established credit rating. A letter from you today will bring the following helpful information: facts about our field work with experiment stations, county agents and growers, history of the success of Pyrocide Dust, a unique selling plan that our licensees like, and advertising and sales promotional helps. No obligation. Write Mr. McLaughlin, McLaughlin Gormley King Co., Minneapolis, Minnesota.

McLAUGHLIN GORMLEY KING CO. - Minneapolis, Minn.

SPECIFY

THREE ELEPHANT

. . . . WHEN BORON IS NEEDED TO CORRECT A DEFICIENCY OF THIS IMPORTANT SECONDARY ELEMENT

Agricultural authorities have shown that a lack of Boron in the soil can result in deficiency diseases which seriously impair the yield and quality of crops.

When Boron deficiencies are found, follow the recommendations of local County Agents or State Experiment Stations.

Information and references available on request.

AMERICAN POTASH & CHEMICAL CORPORATION

70 PINE STREET, NEW YORK CITY

Pioneer Producers of Muriate of Potash in America

See Page 4

magnesium-bearing rocks, dolomite and magnesite, and magnesium silicates. There are huge reserves of all of these natural sources of magnesium in the United States, but with the exception of dolomite they have not been used widely for fertilizers because magnesium has been obtained more cheaply from Germany. Dolomite (calcium-magnesium carbonate) is now used rather generally as a filler for fertilizers. It supplies both lime and magnesium, but the magnesium is not as readily available to plants as it is in such products as magnesium oxide or calcined kieserite.

Low-grade potash salts formerly imported contained several impurities, one of which was magnesium. Subsequently domestic and foreign potash products with lower magnesium content came into general use. This change resulted in signs of magnesium deficiencies in many places, and fertilizer manufacturers began to look for new sources of soluble magnesium. Calcined kieserite and other products from Germany partially supplied this need. Since outbreak of the present war it has been necessary to rely entirely upon domestic sources.

THE N. F. A. SOUTHERN CONVENTION

(Continued from page 6)

"Fertilizer Industry Adjustments During the Emergency," spoke of fertilizer prices which, according to the U. S. Department of Agriculture, are lower than most all the commodities which a farmer buys.

"The price levels at which fertilizers and fertilizer materials moved to the farm during the spring and fall of 1941 were within the reach of most classes of farmers," said Mr. Milliman. "Moving back from the farms to the local dealers and agents, we find that, for the most part, normal retail margins prevailed.

"Moving further back from the dealer to the factory, the price situation that prevailed allows the statement that here, too, normal margins of production, overhead, and selling costs were the rule. Moving all the way back to essential materials, we find that prices of nitrogen and potash were reasonable, and mixers who do not produce superphosphate were able to buy from their larger competitors within limits which permitted free competition with acidulators who sold the complete fertilizer." It is expected by OPA that this situation continues to prevail.

Industry and Government Committee

Mr. Milliman announced the appointment of an industry committee which is to be invited to consult with Government officials generally, including the Department of Agriculture, on emergency matters affecting fertilizers for next year's crops. The men invited to serve the industry and the Government, without compensation for time or travel, are: nitrogen—Sidney B. Haskell, The Barrett Co., New York, also J. A. Woods, Chilean Nitrate Sales Corp., New York; phosphate rock—John T. Burrows, International Agricultural Corp., Chicago; sulphuric acid—Louis H. Carter, The American Agricultural Chemical Co., New York; superphosphate—Chester F. Hockley, The Davison Chemical Corp., Baltimore, Md.; potash—Horace M. Albright, U. S. Potash Co., New York; large fertilizer companies—John E. Sanford, Armour Fertilizer Works, Atlanta, Ga.; medium fertilizer companies—Oscar F. Smith, Smith-Douglass Co., Norfolk, Va.; small fertilizer companies—John A. Miller, Price Chemical Co., Louisville, Ky.; also W. B. Tilghman, Wm. B. Tilghman Co., Salisbury, Md.; C. D. Shallenberger, Shreveport Fertilizer Works, Shreveport, La.; George Cushman, Long Island Produce & Fertilizer Co., Riverhead, Long Island; for the Pacific Coast—Weller Noble, Pacific Guano Co., Berkeley, Cal.; cooperatives—M. H. Lockwood, Eastern States Farmers' Exchange, Springfield, Mass., and M. K. Derrick, Indiana Farm Bureau Cooperative Assn., Indianapolis, Ind.; and an ex-officio member—Charles J. Brand, The National Fertilizer Association, Washington, D. C.

The closing address was made by Dr. Felix Stapleton, Chemical Division, Office of Production Management, Washington, D. C. Dr. Stapleton outlined the situation with respect to the needs, in defense production, of certain chemicals used in fertilizer manufacture.

Fertilizer Machinery *AND* Acidulating Equipment

BATCH MIXERS — PULVERIZERS — CAGE MILLS — SCREENS — SCALES ELEVATORS, AND ALL OTHER EQUIPMENT FOR COMPLETE PLANTS

ATLANTA UTILITY WORKS - - EAST POINT, GA.

WILLIAM G. WELLMANN
BROKER
Baltimore, Maryland

Specializing in

Sulphate of Ammonia
Low Grade Ammoniates
Superphosphate
Sulphuric Acid
Bags

Inquiries and offerings invited

KEYSER BUILDING

DEPENDABLE!

- Large stocks of seasoned materials, available for prompt shipment keyed to your needs.
- Dependable analysis—and every shipment reaches you in good mechanical condition. Write or wire us your next order for

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46 to 48% Available Phosphoric Acid

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We also manufacture
HIGH-GRADE SUPERPHOSPHATE

●

U. S. Phosphoric Products
Division
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Tampa, Florida

New York Office:
61 Broadway
Washington, D. C.
716 Investment Bldg.

FLORIDA TRIPLE PHOSPHATE

Sales Agents:
Bradley & Baker
155 East 44th St.
New York, N. Y.

A Mark of Reliability

Ashcraft-Wilkinson Co.

Fertilizer Materials ▲▼ *Cottonseed Products*

DIRECT IMPORTATIONS OF

Nitrogenous Material - Bone Meal
Nitrate of Soda - Potash Salts
Sulphate of Ammonia

South American Blood and Tankage
Foreign Whale and Fish Guano

Exclusive Selling Agents
DUVAL TEXAS SULPHUR COMPANY, HOUSTON, TEXAS

Home Office: **ATLANTA, GA.**

CABLE ADDRESS:
ASHCRAFT

Offices: NORFOLK, VA., National Bank of Commerce Bldg.; CHARLESTON, S. C., Exchange Bank Bldg.

THE FARM—DEFENSE PLANT NO. 1

(Continued from page 7)

cept by building more plants. Two new plants are now under construction, while the old Government plant at Muscle Shoals, constructed in the last war, but never used for nitrogen, is now being rebuilt. Two more plants have been contracted for. The new plants will be owned by the War Department and operated on a fixed fee basis by the contracting parties. When this expansion is completed, the production of nitrogen from the air will be twice the present capacity.

The output of Chilean nitrate can be greatly expanded, but the problem here, of course, is ships. In the fertilizer year ended last June, about 750,000 tons of Chilean nitrate were shipped to American farms—somewhat more than in the previous year—and the United States Government purchased 300,000 tons as a defense reserve. The farmers would have bought more if it had been available, but a larger number of foreign flag ships which had been chartered for this business were transferred to the British service to carry war supplies.

For the coming year, however, the Chilean Nitrate Sales Corporation has been working with the United States Maritime Commission and other Government departments to solve this transportation problem. We believe that there will be enough ships available to bring at least as much nitrate from Chile as was brought in during the season just ended. If the shipping situation improves, these quantities can be increased. This trade helps one of our good neighbors, Chile. It also helps the United States. We get the nitrate which we need, and by paying American dollars for it, we make it possible for Chile to buy American products.

It is now estimated that the United States will need about 850,000 tons of pure nitrogen in 1941-42 from the three sources mentioned. That is more nitrogen than the country has ever used before, but I am glad to say that we shall be able to obtain that amount. Some of it will be used directly for munitions. Some of it will be used for industrial explosives, now particularly important in defense construction. A large part of it will be used in agriculture.

In announcing its "Food For Freedom" campaign, the Department of Agriculture has reminded us that food is of vital importance in winning the war. Food production in 1941 was the highest on record. Food production in 1942 must be higher still. The food requirements of our own country will increase considerably as a result of the large number of men now in military service. But we have been asked to do much more than merely feed our own. We have been asked to supply food for the gallant defenders of democracy in Britain. The British needs for meat, milk, eggs, vegetables and fruits are going to be very large. In 1942, for example, we have promised Britain evaporated milk and cheese from 4½ billion pounds of fresh milk; pork and lard from 9 million hogs; eggs from 50 million hens; 18 million pounds of poultry meat.

Thus the farm has become the country's most important defense plant. There cannot be any other kind of production, either here or in England, without food production. As the Secretary of Agriculture, Claude Wickard, has stated: "The future of the entire civilized world is bound up in the success of our effort to produce more of the vital foods—rich, nourishing food that will keep up the strength of the industrial workers of two great nations —this country and Great Britain; food that will insure the efficiency of the fighting forces that are defending freedom; . . . food to make America strong by making Americans stronger."

It is no wonder, therefore, that nitrogen is classed as a strategic defense material. It is important not only because we need it for munitions and commercial explosives, but because we need it to maintain the quantity and the quality of our food supply. Nitrogen is a vital element in the strength of the nation, and the United States is fortunate not only in having large sources of nitrogen within its own borders, but also in being close to the deposits of nitrate in one of the friendly republics to the south.

SACKETT EQUIPMENT
for the Fertilizer Plant
BATCH MIXERS • PULVERIZERS
SCREENS • BUCKET ELEVATORS
CONTINUOUS AMMONIATING EQUIPMENT
BASING, MIXING & BAGGING UNITS
COMPLETE FERTILIZER PLANTS
THE A.J. SACKETT & SONS CO.
1701 S. HIGHLAND AVE., BALTIMORE, MD.

MAILING LISTS

GET OUR FREE
REFERENCE
BOOK *and*
MAILING
LIST CATALOG
FREE

Gives counts and prices on accurate guaranteed mailing lists of all classes of business enterprises in the U. S. Wholesalers—Retailers—Manufacturers by classification and state. Also hundreds of selections of individuals such as professional men, auto owners, income lists, etc.

Write today for your copy

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Polk Bldg.—Detroit, Mich.
Branches in Principal Cities
World's Largest City Directory Publishers
Mailing List Compilers. Business Statistics. Producers of Direct Mail Advertising.

ALEX. M. McIVER & SON

Official Brokers for

MILORGANITE

Specializing

CHILEAN NITRATE OF SODA

Nitrogenous Materials

Blood and Fertilizer Tankage

Bone Meals

Manganese Sulphate

SOUTH AMERICAN DRY RENDERED TANKAGE

•

PEOPLES OFFICE BUILDING
Charleston, S. C.

Plant Food *for* Fertilizer Sales

IN the cultivation of fertilizer orders—through sales literature—a "mixture" of advertising knowledge, a "top dressing" of skilled layout and typography plus "high content" printing, may mean the difference between a spotty crop of orders and the harvesting of a favorable yield in sales tonnage.

The selling of fertilizers of standard grades requires "that extra something" in your direct advertising to enable your brand to overcome present day competition or possible price variations.

You can profitably supplement your agents' or dealers' sales efforts with literature which continues to sell after the salesman has left.

May we submit our ideas and printing costs for *your* particular problem?

WARE BROS. COMPANY { *PRINTING* / *Direct Advertising* }

1330 VINE STREET :: :: :: :: PHILADELPHIA, PA.

BUYERS' GUIDE

A CLASSIFIED INDEX TO ALL THE ADVERTISERS IN "THE AMERICAN FERTILIZER"

This list contains representative concerns in the Commercial Fertilizer Industry, including fertilizer manufacturers, machinery and equipment manufacturers, dealers in and manufacturers of commercial fertilizer materials and supplies, brokers, chemists, etc.
For Alphabetical List of Advertisers, see page 33.

ACID BRICK
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.

ACID EGGS
Chemical Construction Corp., New York City.

ACIDULATING UNITS
Chemical Construction Corp., New York City.
Sackett & Sons Co., The A. J., Baltimore, Md.

AMMO-PHOS
American Cyanamid Co., New York City.

AMMONIA—Anhydrous
Barrett Company, The, New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.
Hydrocarbon Products Co., New York City.

AMMONIA LIQUOR
Barrett Company, The, New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.
Hydrocarbon Products Co., New York City.

AMMONIA OXIDATION UNITS
Chemical Construction Corp., New York City.

AMMONIATING EQUIPMENT
Sackett & Sons Co., The A. J., Baltimore, Md.

AMMONIUM NITRATE SOLUTIONS
Barrett Company, The, New York City

AUTOMATIC ELEVATOR TAKEUPS
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

BABBITT
Sackett & Sons Co., The A. J., Baltimore, Md.

BAGS AND BAGGING—Manufacturers
Bagpak, Inc., New York City.
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Cotton
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Paper
Bagpak, Inc., New York City.
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS (Waterproof)—Manufacturers
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

BAGGING MACHINES—For Filling Sacks
Atlanta Utility Works, East Point, Ga.
Bagpak, Inc., New York City.
Sackett & Sons Co., The A. J., Baltimore, Md.

BAG PILERS
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.

BEARINGS
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

BELT LACING
Sackett & Sons Co., The A. J., Baltimore, Md.

BELTING—Chain
Atlanta Utility Works, East Point, Ga.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

BELTING—Leather, Rubber, Canvas
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Sackett & Sons Co., The A. J., Baltimore, Md.

BOILERS—Steam
Atlanta Utility Works, East Point, Ga.

BONE BLACK
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Huber & Company, New York City.

BONE PRODUCTS
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.
Wellmann, William E., Baltimore, Md.

BORAX AND BORIC ACID
American Potash and Chem. Corp., New York City.
Pacific Coast Borax Co., New York City.

BROKERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Dickerson Co., The, Philadelphia, Pa.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Keim, Samuel L., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

BUCKETS—Elevator
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

HENRY L. TAYLOR, *Broker*
Bentley's Code Cable Address "HLTAYLOR"
NORTH CAROLINA BANK BLDG., WILMINGTON, N. C.
Menhaden Fish Products and Fertilizer Materials

A Classified Index to Advertisers in "The American Fertilizer"

BUYERS' GUIDE

For an Alphabetical List of all the Advertisers, see page 33

BUCKETS—For Hoists, Cranes, etc., Clam Shell, Orange Peel, Drag line, Special; Electrically Operated and Multi Power
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.

BURNERS—Sulphur
Chemical Construction Corp., New York City.

BURNERS—Oil
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.

CABLEWAYS
Hayward Company, The, New York City.

CARBONATE OF AMMONIA
American Agricultural Chemical Co., New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.

CARS—For Moving Materials
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CARTS—Fertilizer, Standard and Roller Bearing
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

CASTINGS—Acid Resisting
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Duriron Co., Inc., The, Dayton, Ohio.

CASTINGS—Iron and Steel
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CEMENT—Acid-Proof
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.

CHAIN DRIVES—Silent
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CHAINS AND SPROCKETS
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CHAMBERS—Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.

CHEMICAL APPARATUS
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Duriron Co., Inc., The, Dayton, Ohio.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

CHEMICALS
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Barrett Company, The, New York City.
Bradley & Baker, New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.

CHEMICALS—Continued
Huber & Company, New York City.
Phosphate Mining Co., The, New York City.
Wellmann, William E., Baltimore, Md.

CHEMICAL PLANT CONSTRUCTION
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CHEMISTS AND ASSAYERS
Gascoyne & Co., Baltimore, Md.
Shuey & Company, Inc., Savannah, Ga.
Stillwell & Gladding, New York City.
Wiley & Company, Baltimore, Md.

CLUTCHES
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CONCENTRATORS—Sulphuric Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.

CONDITIONERS AND FILLERS
American Limestone Co., Knoxville, Tenn.
Dickerson Co., The, Philadelphia, Pa.
Phosphate Mining Co., The, New York City.

CONTACT ACID PLANTS
Chemical Construction Corp., New York City.

COPPER SULPHATE
Tennessee Corporation, Atlanta, Ga.

COTTONSEED PRODUCTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

CRANES AND DERRICKS
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.
Link-Belt Speeder Corp., Chicago, Ill., and Cedar Rapids, Iowa.
Sackett & Sons Co., The A. J., Baltimore, Md.

CYANAMID
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Jett, Joseph C., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

DENS—Superphosphate
Chemical Construction Corp., New York City.
Stedman's Foundry and Mach. Works, Aurora, Ind.

Andrew M. Fairlie
CHEMICAL ENGINEER
22 Marietta Street Building ATLANTA, GA.
CABLE ADDRESS: "SULFACID ATLANTA"

SULPHURIC Acid Plants . . . Design, Construction, Equipment . . . Operation . . . Mills-Packard Water-Cooled Acid Chambers, Gaillard Acid-Cooled Chambers, Gaillard Acid Dispersers, Contact Process Sulphuric Acid Plants.

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DRYERS—Direct Heat
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Sackett & Sons Co., The A. J., Baltimore, Md.

DRIVES—Electric
Link-Belt Company, Philadelphia, Chicago.

DUMP CARS
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

DUST COLLECTING SYSTEMS
Sackett & Sons Co., The A. J., Baltimore, Md.

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Sackett & Sons Co., The A. J., Baltimore, Md.

ELEVATORS
Atlanta Utility Works, East Point, Ga.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

ELEVATORS AND CONVEYORS—Portable
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Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

ENGINEERS—Chemical and Industrial
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

ENGINES—Steam
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

EXCAVATORS AND DREDGES—Drag Line and Cableway
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.
Link Belt Speeder Corp., Chicago, Ill., and Cedar Rapids, Iowa.

FERTILIZER MANUFACTURERS
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Farmers Fertilizer Co., Columbus, Ohio
International Agricultural Corporation, Chicago, Ill.
Phosphate Mining Co., The, New York City.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

FISH SCRAP AND OIL
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
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McIver & Son, Alex. M., Charleston, S. C.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

FOUNDERS AND MACHINISTS
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

GARBAGE TANKAGE
Wellmann, William E., Baltimore, Md.

GEARS—Machine Moulded and Cut
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

GEARS—Silent
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

GELATINE AND GLUE
American Agricultural Chemical Co., New York City.

GUANO
Baker & Bro., H. J., New York City.

HOISTS—Electric, Floor and Cage Operated, Portable
Hayward Company, The, New York City.
Jeffrey Manufacturing Co., The, Columbus, Ohio.

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Atlanta Utility Works, East Point, Ga.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
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Sackett & Sons Co., The A. J., Baltimore, Md.
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IMPORTERS, EXPORTERS
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Wellmann, William E., Baltimore, Md.

IRON SULPHATE
Tennessee Corporation, Atlanta, Ga.

INSECTICIDES
American Agricultural Chemical Co., New York City.
McLaughlin Gormley King Co., Minneapolis, Minn.

LACING—Belt
Sackett & Sons Co., The A. J., Baltimore, Md.

LIMESTONE
American Agricultural Chemical Co., New York City.
American Limestone Co., Knoxville, Tenn.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Wellmann, William E., Baltimore, Md.

LOADERS—Car and Wagon, for Fertilizers
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Acid Making
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.
Duriron Co., Inc., The, Dayton, Ohio.
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Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MACHINERY—Coal and Ash Handling
Hayward Company, The, New York City.
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Elevating and Conveying
Atlanta Utility Works, East Point, Ga.
Hayward Company, The, New York City.
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Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

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MACHINERY—Power Transmission
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MACHINERY—Pumping
Atlanta Utility Works, East Point, Ga.
Duriron Co., Inc., The, Dayton, Ohio.

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MAGNETS
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Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MANGANESE SULPHATE
McIver & Son, Alex. M., Charleston, S. C.
Tennessee Corporation, Atlanta, Ga.

MIXERS
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

NITRATE OF SODA
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Barrett Company, The, New York City.
Bradley & Baker, New York City.
Chilean Nitrate Sales Corp., New York City.
Huber & Company, New York City.
International Agricultural Corporation, Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.
Wellmann, William E., Baltimore, Md.

NITRATE OVENS AND APPARATUS
Chemical Construction Corp., New York City.

NITROGEN SOLUTIONS
Barrett Company, The, New York City

NITROGENOUS ORGANIC MATERIAL
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
DuPont de Nemours & Co., Wilmington, Del.
Huber & Company, New York City.
International Agricultural Corporation, Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Smith-Rowland Co., Norfolk, Va.
Wellmann, William E., Baltimore, Md.

NOZZLES—Spray
Monarch Mfg. Works, Philadelphia, Pa.

PACKING—For Acid Towers
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.

PANS AND POTS
Stedman's Foundry and Mach. Works, Aurora, Ind.

PHOSPHATE MINING PLANTS
Chemical Construction Corp., New York City.

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American Cyanamid Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
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Huber & Company, New York City.
International Agricultural Corporation, Chicago, Ill.
Jett, Joseph C., Norfolk, Va.
Phosphate Mining Co., The, New York City.
Ruhm, H. D., Mount Pleasant, Tenn.
Schmaltz, Jos. H., Chicago, Ill.
Southern Phosphate Corp., Baltimore, Md.
Taylor, Henry L., Wilmington, Del.
Wellmann, William E., Baltimore, Md.

PIPE—Acid Resisting
Duriron Co., Inc., The, Dayton, Ohio.

PIPES—Chemical Stoneware
Chemical Construction Corp., New York City.

PIPES—Wooden
Stedman's Foundry and Mach. Works, Aurora, Ind.

PLANT CONSTRUCTION—Fertilizer and Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

POTASH SALTS—Dealers and Brokers
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
International Agricultural Corporation, Chicago, Ill.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, Del.
Wellmann, William E., Baltimore, Md.

POTASH SALTS—Manufacturers
American Potash and Chem. Corp., New York City.
Potash Co. of America, New York City.
Union Potash & Chemical Co., Chicago, Ill.
United States Potash Co., New York City.

PULLEYS AND HANGERS
Atlanta Utility Works, East Point, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

PUMPS—Acid-Resisting
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Duriron Co., Inc., The, Dayton, Ohio.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

PYRITES—Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., New York City.
Jett, Joseph C., Norfolk, Va.
Wellmann, William E., Baltimore, Md.

QUARTZ
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.

RINGS—Sulphuric Acid Tower
Chemical Construction Corp., New York City.

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SEPARATORS—Air
Sackett & Sons Co., The A. J., Baltimore, Md.

SEPARATORS—Including Vibrating
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

SEPARATORS—Magnetic
Sackett & Sons Co., The A. J., Baltimore, Md.
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SHAFTING
Atlanta Utility Works, East Point, Ga.
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Stedman's Foundry and Mach. Works, Aurora, Ind.

SHOVELS—Power
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
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Sackett & Sons Co., The A. J., Baltimore, Md.

SPRAYS—Acid Chambers
Monarch Mfg. Works, Inc., Philadelphia, Pa.

SPROCKET WHEELS (See Chains and Sprockets)

STACKS
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SULPHATE OF AMMONIA
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Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
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Texas Gulf Sulphur Co., New York City.

SULPHURIC ACID
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Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
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Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.

SULPHURIC ACID—Continued
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Wellmann, William E., Baltimore, Md.

SUPERPHOSPHATE
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
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SUPERPHOSPHATE—Concentrated
Armour Fertilizer Works, Atlanta, Ga.
International Agricultural Corporation, Chicago, Ill.
Phosphate Mining Co., The, New York City.
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SYPHONS—For Acid
Monarch Mfg. Works, Inc., Philadelphia, Pa.

TALLOW AND GREASE
American Agricultural Chemical Co., New York City.

TANKAGE
American Agricultural Chemical Co., New York City.
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Ashcraft-Wilkinson Co., Atlanta, Ga.
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Jett, Joseph C., Norfolk, Va.
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TANKAGE—Garbage
Huber & Company, New York City.

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Sackett & Sons, Co., The A. J., Baltimore, Md.

TILE—Acid-Proof
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.

TOWERS—Acid and Absorption
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.

UNLOADERS—Car and Boat
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Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

UREA
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UREA-AMMONIA LIQUOR
DuPont de Nemours & Co., E. I., Wilmington, Del.

VALVES—Acid-Resisting
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
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By-Products *and* Fertilizer Materials

(SINCE 1898)

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Use this Hayward Class "K" Clam Shell for severe superphosphate digging and handling.
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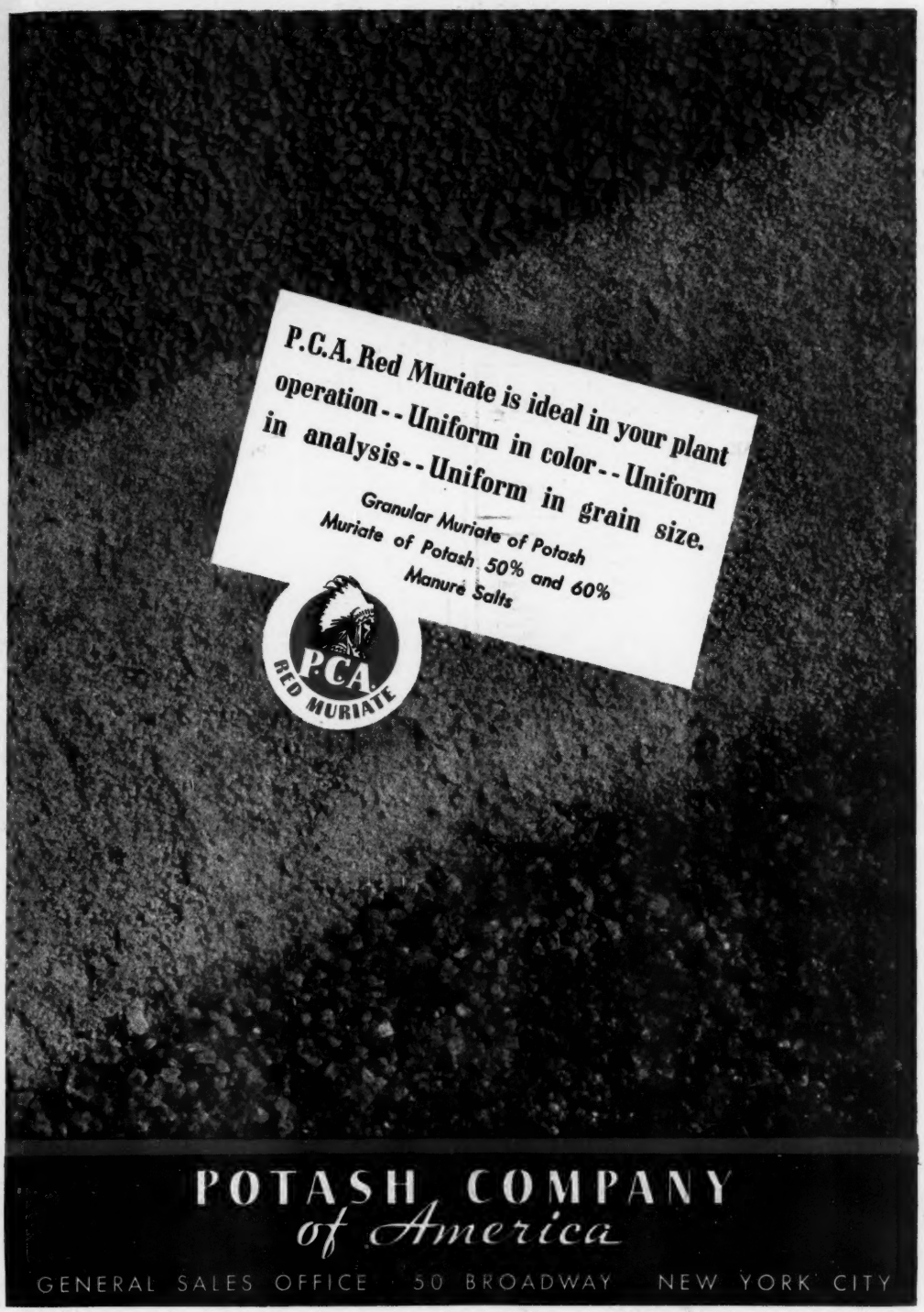
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